Urban Services Planning
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Lecture 02
Strategic Aspects

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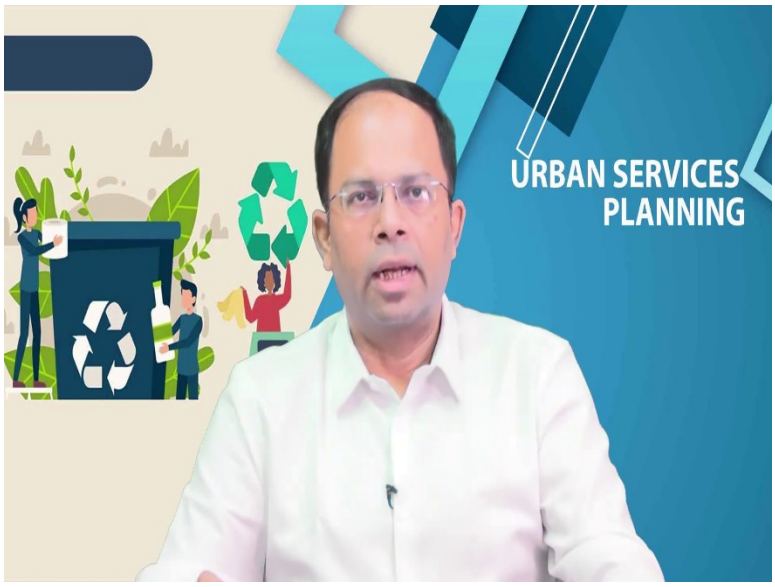

Welcome back in lecture 2 we will talk about the different strategic aspects of Urban Services Planning. So, the different concepts that we will cover in this particular lecture are on strategic aspects of municipal services planning, capital intensive project characteristics, stakeholder and citizen participation, integrated infrastructure and services planning and finally, smart infrastructure and services.

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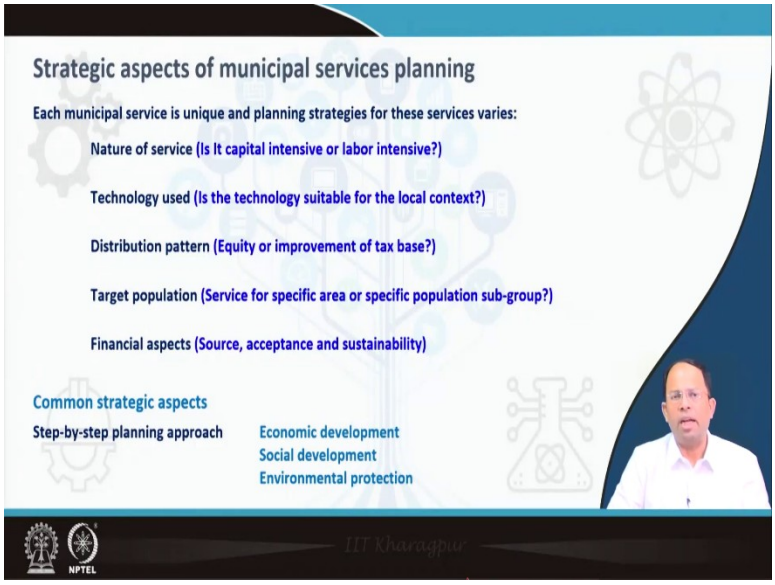

Now, in the last lecture, we have talked about the different Urban Services that can be provided in a municipal area. And in this particular course, we are only focusing on the services which are primarily served or primarily provided by the municipal bodies or those aspects of services, which are provided by municipal bodies that are being covered in this particular course. Now, each of these municipal services the each of the service is unique.

Of course, if I have to provide fire services, the way I have to plan these services is totally different from how I have to plan for solid waste management services, because these are 2 totally different aspects. So, each municipal service is unique and planning strategies for these services also will be different.

So, in case of when we are talking about fire services, I have to determine the nature of the road network, what is the congestion level of that network, what is the time taken by the vehicle to reach a particular location based on that I have to determine at what distances I should provide this particular fire stations and so on.

But if I talk about solid waste management services, I would think probably about that, if I want a solid waste management service, what is the final goal that is, what sort of strategy should I adopt, so, that overall the environment of the city is preserved, or we can think about how to increase the recycling of that particular. So, as you can see… of those particular waste products, so, as you can see that the approach is the questions that we will ask is more or less is different for different services.

So, but there are certain aspects that has to be also which are common that means, for all sorts of services planning, there are certain things which has to be common and those aspects, we will also be discussed during the course of this particular lecture. Now, before we go into that, now, when we talk about municipal services, few direct questions can be asked for any service, for example, what is the nature of the service?

Now, when I say nature of the service, it is not the type of the service, a type could be fire service, health service, solid waste management service, but when I say nature of the service, it is more about is it a capital-intensive service or a labor-intensive service? That means, does it involve a lot of investment? Or does it involve a lot of people to work in that particular service?

So, when people are working in a service, that means it is a service which is provided daily monthly or a continuously, and then there are people engaged to provide those services. But when I say it is a capital-intensive service, that means it could be something it is it could be no services, that the only capital intensive or purely labor intensive, but it is a mix of both, but it when I say a capital-intensive service, that means if I am talking about water treatment, so water treatment is a capital-intensive service, because they have to set up a water treatment plant and that will involve a lot of capital.

Then comes the second question, then what is the technology used for this service for any kind of services, there could be different technologies that they utilized. Now, what is technology? Technology means that different choices that we have to make in a way in the way we have to provide those services. For example, when I talk about solid waste, I can add the one the discarded waste can be taken to a landfill site, and then we can put it in a landfill site and then we can cover it with soil and we can just put it there, or we can burn it like we can incinerate it.

So, it depends on which technology I am choosing. So there must be a reason for choosing that particular technology. There are different aspects to it the price of the technology, what is suitable for that particular times of waste that is generated or what is suitable in the local context. So, if I propose incineration plant are for solid waste incineration plant and if the waste, the nature of the waste is very wet in a particular area for example, we have got this lot of organic matter in the waste.

So probably an incineration plant is not a good idea, instead probably a composting plant is a better idea. So, is the technology suitable for the local context? So, that is the question that we are going to ask. Next comes the distribution pattern. That means, will I try to provide these services equally amongst everybody? Or will I provide different varieties of the services to different population or different geographic areas of my urban area?

For example, if I say that the what is the solid waste management service? Do I provide solid waste management equally? Well, in different parts of the city or in some parts of the city, I will provide more service for example, street cleaning service, do I provide it more in the commercial areas so that my commercial areas look cleaner. So, these are the questions that we should ask. And there is a reason for that, as we are discussed in the previous lecture. Also, that means, is it about equality or it is about improvement of tax base.

That means, equality is when I am providing equal amount of services to everybody or for every area. But if I target that I want to improve tax base, I want to attract people to certain areas and so on, I may try to provide a different level of service at those particular areas. So that is the distribution pattern of services distribution pattern actually refers to how the service is distributed over different geographic areas, then the target population that means for which specific area or which specific population subgroup we are targeting a particular kind of service, like geriatric services are targeted towards the older people.

Whereas for maternity, maternal health services are targeted for woman. So in that way, we have to also decide on what services for whom, then financial aspects, that means, where should I get money for this kind of services, the acceptance of the services, like for example, if I am charging money for the people from the me people, we are asking them to pay money for certain service, that should be acceptable by the people.

So if I say that everybody has to pay 50 rupees per month for solid waste management collection, probably people would be okay with it. But if I charge them 5000 rupees for solid waste collection from a particular locality, nobody is going to accept it, so acceptance is very, very important. Then comes the sustainability, that means I can provide a service but if I cannot recover the money for that service, eventually if my funding source vanishes, in that case, I will not be able to sustain that service.

So I can start the service with some, exogenous funding source, but if I do not have endogenous, ways to recover money from my own area, I may run out of the that exogenous

funding source, like for example, Central, maybe it is paying me money to start a system, but if centre does not continues to pay the money, if and my service design is such that it is not sustainable, I would not be able to continue that particular service.

So, these are the different questions that we need to ask, but at the same point of time, there has to be a step-by-step planning approach to address all these questions. So, if I go with the questions, and we try to answer them, we have to go one step at a time, and we need to give answers to all these questions and then probably our service planning should be properly designed. Now, whatever is the steps that we take, there has to be certain goals or certain targets.

So, what are those? My goal has to be the service or the quality of service or the distribution pattern, is it targeted towards what is my goal in terms of economic development, what economic development I am trying to achieve? So that I have to design my service that particular way or what social development I am trying to improve or reduce the child mortality rate to a certain value in my urban area. So what sort of service should I provide to do that?

Environmental protection so, I want to bring down the air pollution or air pollution pollutants in my urban area or the pollution levels in my urban area, in that case, what sort of measures should I take? So, what sort of services should I take? So, this is all about environmental protection? So primarily economic development, social development and environmental protection? These are my objectives that have to attend for particular planning of urban areas, planning for services.

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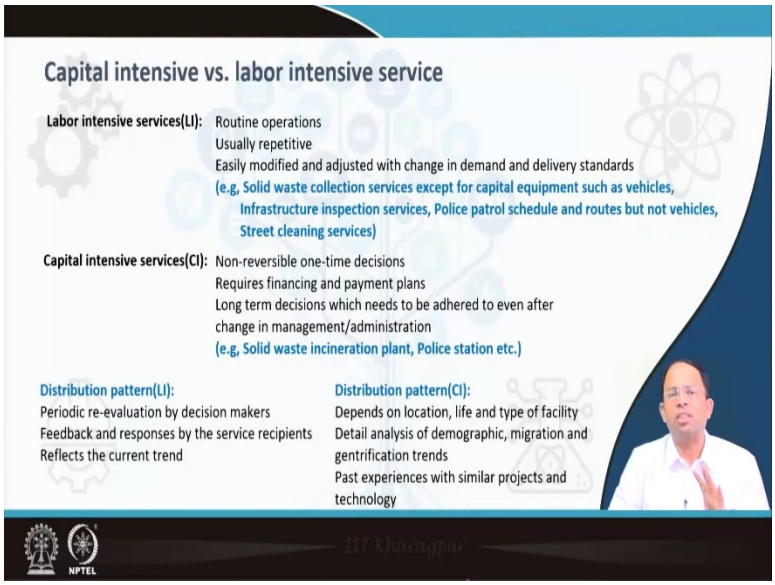

Now, let us go into each of the different aspects or this strategic aspect, the first one that we will discuss is capital intensive versus labor intensive service. So, this is primary difference between the 2 kinds of services.

Like for example, we are saying that capital intensive requires a lot of money, or the money component is more in terms of like, initially there is big investment and then the perennial investment is not that high, whereas for labor intensive service, it is more or less, it is a routine operation, usually it is repeats every month or every week or so, on and it is more labor, it requires more manpower to deliver those kind of services.

Now, the primary difference in the planning process that we have to adopt for these 2 kinds of services is in the first case, that is labor intensive service as that it is a repetitive service, it is a routine operation, that means there is provision to change it, if I required to change it.

So, that means, that distribution pattern can be changed from one-time period to another, because there is no problem with that, I can increase the solid waste collection service in one area, if there is a problem or if that problem is taken care of, then we can move into another area and can provide more intense service there are street cleaning services for that matters could be also gradually provided to different areas. Then similarly, the service standards based on the changing and also the demand can change like for example, urban area is growing.

So, initially the demand was not high for that particular service, because the population was not there, but now that more population has come there is requirement for a particular service. So, that has to be provided. So, we cannot… we have to gradually modify the service plan. Similarly, same goes for the delivery standards, we may initiate the service with a lower delivery standard, but in future we can improve those particular delivery standards.

So all kinds of services as I was telling you earlier that it has got a capital component and then there is a labor component, so, if I give you an example, solid waste collection includes both capital equipment, such as vehicles, but at the same time, it requires people to go door to door and collect this waste. So, where capital improvement or buying of vehicles it is a one-time affair, it requires a lot of capital, but when we have to pay salaries for the staff, which is a regular monthly affair.

So, that part that labor intensive part of solid waste management, if I say that is door to door solid waste collection service, so, that is how we can define that service. Similarly, there could be infrastructure inspection services, police petrol service schedules and police petrol routes, but not the vehicles that has to be bought for that, that becomes a capital part.

Street cleaning services, so these are mostly labor-intensive services. Whereas capital intensive services, the primary difference with labor intensive services is, these are one-time decisions, that means if I set up a incineration plant in an urban area that is set up so you cannot change it next month. So, we have to go along with that decision.

So, what it means is, it is a long-term decision, and we need to adhere to this particular decision for the next planning period that we will adopt. So, we have to make sure that a certain administration or management for that particular urban body they have taken a decision, they are based on different estimates and based on different requirements, they have decided on a particular technology or a particular way and they have set up a certain kinds of infrastructure, the next group of people coming to administration or in management or coming in charge of that urban area they cannot change it, they cannot say that no, this is the wrong decision, we will move to something else.

So that means that we have to take that decision very carefully in the first place, and we have to justify the decision. So, that nobody else can say that is not a good decision. So, because these are long term decisions, this is a lot of capital is required, we also require a financing for this decision. And we also require proper payment plans, because I may have to take a

loan for this particular decision. And I have to pay money for that particular loan over a period of 20 or 30 years.

So, that means it is a very, very major decision that has to be taken. So that is the primary difference between capital intensive services and labor-intensive services. So in terms of the distribution pattern of services, for labor intensive services, we can say that we can do periodic re-evaluation by the decision makers. So that means we can change the decisions after certain amount of time.

Then we can take feedback and responses from the service recipients and as per their feedback we can modify the service or based on the current trends, the way the society works based on that we can provide certain kinds of services, but in future if those trends are not there, or other issues become more prominent, we can provide services as per that.

So, that is how the distribution pattern for labor intensive services is very flexible, and that can also change, but distribution pattern for capital intensive services is not that flexible, why? Because for example, whenever we are talking about capital facility or infrastructure, we already have decided on its location, on its life, that is how long it will operate, and we have also determined the type of that facility, so, we cannot change that.

So, we have already fixed it somewhere. And we have already that means we have to do detailed analysis of the demographic, characteristics of that particular area, we have to understand how much new people are coming to this area via migration, we have to understand what is the gentrification that is happening in that area. Now, what does gentrification means it means that gradual replacement of the native population with some people who are coming from outside.

So, suppose we develop a particular area like for example, a transit station and we do a transit-oriented development of an area. So, the property prices increase, the local people start selling of the property and new people come comes in over here who can afford to buy this property at a very high price? So, that is gentrification. So, we need to do this analysis before we provide an infrastructure.

So, I provide an infrastructure then based on demographic changing, demographic structure, gentrification, everything changes in that area, and that particular facility or infrastructure becomes redundant. So that cannot happen. So, then, that is one then the other is, we have to

look into past projects, past experiences with this kind of technology, which we are trying to introduce, based on all this we have to take a distribution on what should be the distribution pattern for this capital-intensive service. And once we decide on that, that is a fixed decision. So it we cannot change it too much.

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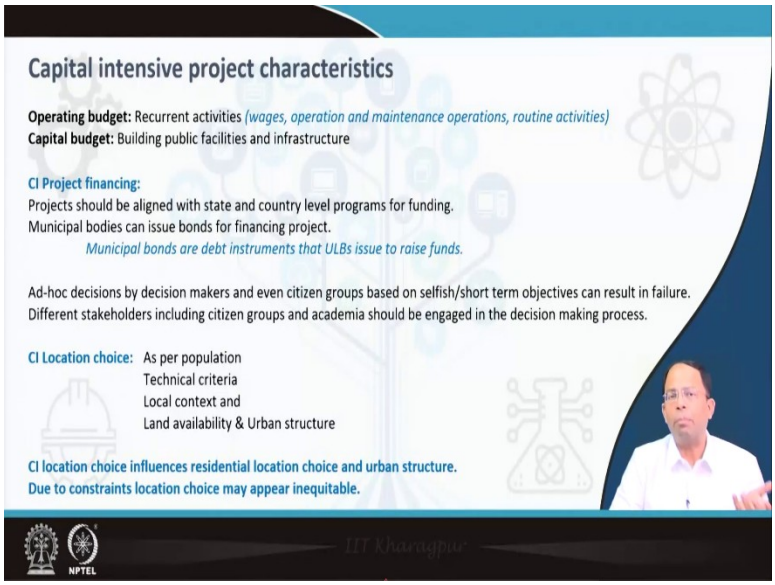

Now, in terms of capital, we have been already talking about that means, there are 2 parts to budgeting or financing in case of municipal Urban bodies, or urban local bodies, in that case, we have a capital budget for the municipality and we have an operating budget for the municipality, that capital budget includes budget for creation of new public facilities, new buildings, new infrastructure and so on.

So, that means we are augmenting the infrastructure for the urban area, and then there is the operating budget that means every month we have to pay wages or salary, we have to have certain kinds of routine operations that is to be done, we have to do some routine maintenance work like for example, I have to maintain a road network or I have to maintain the streetlight network, every month, there are some streetlights will fail I have to replace them, then we have to have keep a group of people who will keep putting on and off those lights every day.

So, this operation has to be continued every day. And then there are other routine activities. So, that means there is a monetary requirement every month for maintaining this routine activity and also to pay salaries and all. So, this is the operating budget for the municipal

corporation or that municipal or that urban local body. So, capital budget means these are again, investments these are large investment.

So that means there has to be some amount of financing for this kind of large investment because usually the municipalities are not able to raise money through provision of services for this kind of investment. So, how they can do that? So, first of all, the way the overall structure is there, we will discuss in details about municipal management and finance probably in the subsequent lectures.

But broadly, we can say that usually municipal bodies can collect only a part of the money that they are spending on the services that they are providing. So, most of the money comes as in form of some grants or some AIDS from state bodies or central bodies. For example, the Ministry of Urban Development, they give funds for running a certain program in a municipal area.

Similarly, the state will also give you certain funds. Now, earlier municipalities were able to collect a lot of taxes nowadays, if they can only collect the property tax and maybe a few other taxes, but primarily every other taxes have now come under the purview of GST and GST is again aligned with that centre and state government will get a share of that GST. Now, once central and state government gets that money or recover that money from GST, then they can send some amount of funding for the municipality.

So, that means, projects undertaken by the municipalities or what kind of infrastructure the municipality builds, it has to be aligned with the country and the state programs or municipal or infrastructure building programs that the government is undertaking. For example, if a Swachh Bharat campaign is being undertaken in the country now, so, that is the country the central government is funding for taking up projects which are related with Swachh Bharat mission.

So, that means, if the municipality also alliance its projects or infrastructure building with that, it would be easier for them to get the funding. Similarly, municipal bodies can also generate some amounts of finances via bonds or they can also that means, they can also issue some this kind of depth instruments, municipal bond is a depth instrument and this is floated by the municipality. And these are short term depth instruments that means, people can buy these bonds at a certain price and the municipality is supposed to pay some interest on that particular principal amount.

And that is how the person who is buying the bond will be able to generate income, and the municipality will be paying will be able to pay that money over a longer period of time. So, because a capital-intensive project requires the money at one at a very short at the beginning of the construction project or during the construction, it will require money, but over its lifetime, it will be able to generate some amount of money and accordingly that money would be used to pay for this interest or pay for interest for this bonds or municipality can also take a loan for different agencies.

So, accordingly that interest could be paid from the money that is generate over the lifetime of this particular infrastructure. So, these are how municipal projects are financed or particularly this capital projects are finance. And this is and what it indicates is it is not a decision which has to be taken for… it is not a one on one ad hoc decision, it is a very important decision, it has long term effects and so on.

So, it has to be taken with care. So, sometimes what happens because there are different management groups which come to manage urban local body because its elected representatives are chosen by the people and that choices change at different time periods, sometimes decision makers based on their goal or based on the goal of or based on the wishes of their constituents or the elect or their particular constituency, they will take a decision which is not suitable for the overall area or it may not be suitable for the longer term.

So, that may create some problems, sometimes decisions by certain citizen groups like there is a citizen group which wants something and they influence their elected representatives to take a decision based on that. So, this short term selfish decisions can result in failure.

So, whenever we are looking into this capital expenditure or big projects, capital projects, in that case, we have to be very, very careful. And it is better to involve the entire citizens of the city or a multitude of citizen groups from different parts of the city, we have to involve academia. And if all these people are engaged in the decision-making process probably the decision is much more valid decision it will be a much more decision which will look into equity and the long term aspects of that particular decision will be taken care of.

So, whenever we have capital intensive project or infrastructure projects, then a few other questions also comes to the mind that is what is the choice of location for that particular project, because this is very important, if I am deciding on a landfill site, then if I choose a particular location based on technical criteria based on criteria of land availability based on

the urban network structure and so on, then it may we may find out that the people who are living around that particular area, they may not be willing to allow that kind of landfill site to come near that area.

So, there will be a lot of protest. So, before we decide on something we have to involve the population. So, we have to understand their choices and all we have to convey the reasons for our choices. So, that they people also understand that well, it is may not be very beneficial, but for that they will be compensated, but it will also generate a lot of good for the rest of the urban area.

So, if I take the entire population into consensus or and then we look into the different technical criteria, local contexts, land availability and all this, then only we can take a proper decision on location choice for a particular infrastructure. And on the other hand, one side decide on the location choice for a particular infrastructure, it then starts influencing the residential location choice for the people. Suppose I am providing an infrastructure like a park, it is a social infrastructure.

So, if I provide a nice park in an urban area, people will think that if I can buy a land near that particular park or if I buy an apartment near that particular park, then probably I can utilize that park. So, the infrastructure location is based on the choices by the people and once the infrastructure comes, then that influences the choices of the people and also it influences the resulting urban structure.

So, that means the choice for infrastructure is based on people's choices. And at the same time, the choice of the location of our infrastructure determines people's choices for subsequent people choices to locate in an urban area. So, as you can see that because of many of the land availability, and certain other issues like the choices of the people, we may not be able to provide the infrastructure where it should be.

So, there has to be because of these constraints, the location choice may actually appear inequitable, that means it may feel that certain parts of the city is having more infrastructure, but the reason is because we have more land available therefore, provision of that infrastructure. So some decisions may appear inequitable, but actually they are not.

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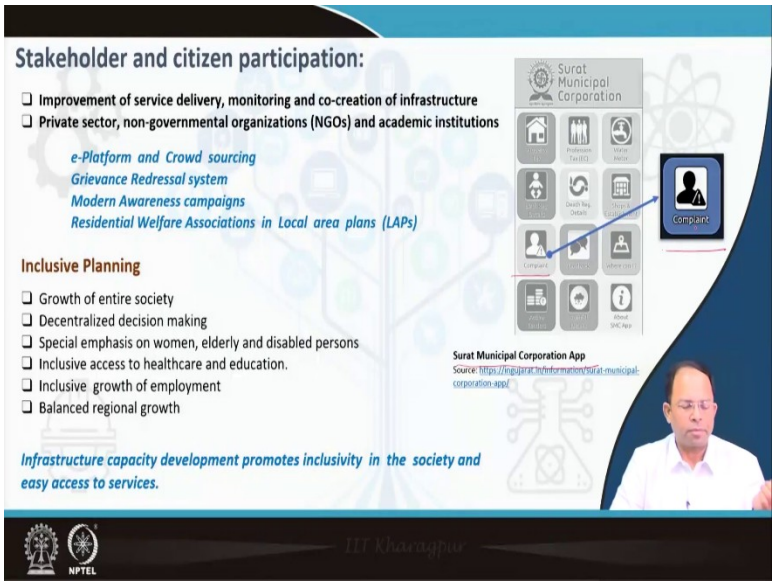

Then the other aspects of the strategic aspect is of course, stakeholder and citizen participation, we were just discussing on those aspects that means whenever we are looking into certain projects, we have to take in people into consensus, and because this will improve on service delivery, we can improve the monitoring and people can also help in co creation of infrastructure that means people can give their feedback they can tell that this is required and people can be involved in the infrastructure creation process.

And similarly, to people the citizens, we can also involve other stakeholders for example, the private sector could be also part of provision of municipal services, the non-governmental sectors could be also part of a provision of municipal services and then there is the academic institutions, who can guide municipal bodies on what sort of services can be provided, how can be provided and so on.

So, when we talk about more involving all stakeholders, private stakeholders, citizens, non-governmental agencies there are so there could be different ways we can do that. And one way is to of course, introduce e-platforms such as you can see on the image, this is the Surat for the Surat Municipal Corporation, they have created an app through this app, a lot of services is provided like property tax, and all these things can be paid. And at the same time, you can also raise a lot of complaints and when you raise complaints, you can also get solutions for these complaints.

So, this kind of crowdsourcing platforms or these kinds of e-platforms can actually help in delivery of the service and it can increase citizen participation. So, grievance Redressal

system, which is like this complaint system, then we can also conduct modern awareness campaigns, if I want to improve the sanitation condition or if you want to improve perception amongst the individuals or if I want to change the perception or behaviour of individuals in regards to throwing of garbage or littering in the streets.

I can conduct awareness campaigns in the urban area, and we can involve the citizens, the NGOs to conduct those particular campaigns. And that will actually improve the overall urban services. And then in addition to NGOs, and all we can also have residential welfare associations, and particularly local areas, we can involve this organization which are people or groups of residents of that particular area who will like to also be involved in the decision making process.

So that will actually help in the overall service planning for an urban area. Then the other aspect of the citizen participation is inclusive planning. That means, when we talk about inclusive planning, we are talking about growth of the entire society. And it is better to go for a decentralized decision making that means, the decisions should come from the grassroots then to the maybe the representative of those people, the elected representative and then gradually it can go to the higher levels.

And then we can have special emphasis on women, elderly or disabled person, because these are the more vulnerable groups in an urban area. And we can also when we talk about inclusive planning, we can talk about provision of education, healthcare, because this is social services that will ensure inclusivity or the overall growth of society, and we can look into the inclusive growth of employment generation in an urban area, we can look into the growth of different parts of the urban area or the surroundings of the urban area.

So, we can look into balance regional growth, so all these are part of inclusive urban planning. So inclusive urban planning and citizen participation, these 2 goes hand in hand.

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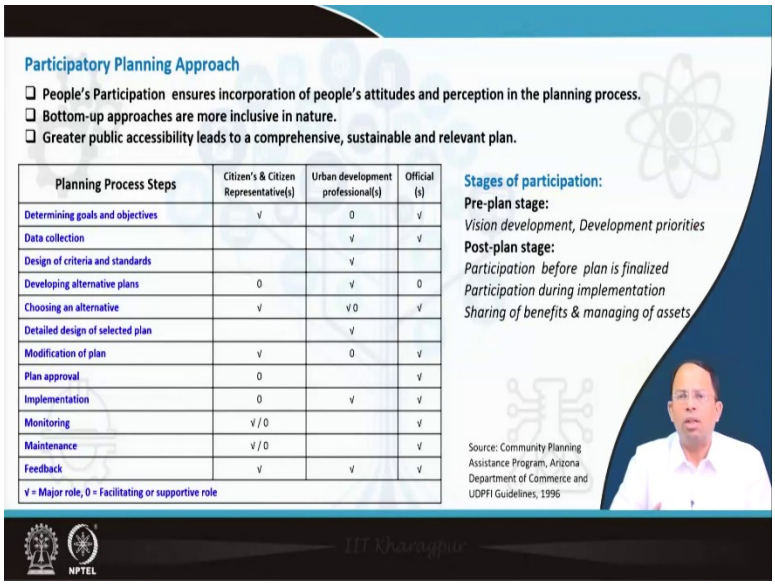

So, when we look into involving of citizens, usually, Participatory Planning Approach is the key term that is being utilised to consider how people could be actually involved in the plan making process. And this environment could be both at the pre-planned stage, that is why we are developing a vision for what should be done for the urban area, we can also be in determining what sort of development is required for that particular urban area.

For example, we have to go and do service of localities and we have to do do door to door and do household service and ask people that what they want for that particular urban area. So, that is how we can involve people in the pre plan stage. And once the basic plan is done by the technical people or the urban planners, after that we can take this particular plan in front of the people explain what are the benefits of this plan, and we can ask them that do they want any change in that plan?

So, before we finalise that plan, we again take their feedback and once the plan is decided on and then we want to start implementing this particular services or other infrastructure based on these plans, then people can also be involved and they can give their feedback. And finally, when the final infrastructure of the facility is in place, the benefits that facility generate people can also be part of that particular sharing of those benefits, they may also get benefited by that facility, and also they may be involved in managing of those facility and infrastructure.

So, that means some amount of cleaning some amount of monitoring can be done from the citizens themselves, and they can also report and they can maintain that facility in their

particular locality or their neighbourhood and so on. So, this cannot happen for all sorts of facilities, but for certain facilities, it is possible particularly for social infrastructure facilities, this is absolutely possible.

So, if I talk about considering people's attitude and perception in the planning process, automatically, this bottom of approaches are more inclusive in nature. So, that is we are taking different parts of the society together in the planning process. And finally, it gives a greater public… because we are giving more access to the public to the decision-making process, the quality of the plan, the sustainability of that plan, or how much it covers, what are the different aspects, that particular plan addresses all this is much more comprehensive.

So, usually, if I involve people in most cases, the plan that turns out is usually much better than without involving the people. So, if you can see this particular table, you can see the planning different stages of the planning process, and you can see in each of these planning process, the role of citizens, the role of urban development professionals and then the officials or the managers or the ULB officials, what is their role, for example, the tick indicates a major role and this zero indicates a supportive role.

So, you can see that in the determination of goals and objectives for any kind of plan for service plan or for any plan in an urban area citizens role is primary. It is a major role, whereas urban development professionals their role is very minimum they can say certain things, but we should go with what people want, and also the municipal officials, they know that what is their capacity, what they can provide, so what they want.

So these are the 2 people whom we should mostly take care of. The municipal officials will be able to say where are the gaps, what are the technical challenges, but people will be able to say the actual practical problems that they face, what has to be changed and so on. Similarly, for the data collection process, the design criteria standards and developing of alternative plans, this is more technical decisions.

So, this is where the professionals are more involved. And then finally, again for choice of alternatives, the professionals can guide but primarily, it is the choice of the people based on what we can afford, what they want in their particular urban area that has to be chosen. And then finally, modification of plans. Then, finally, monitoring maintenance, these are all the different stages where people can be involved in.

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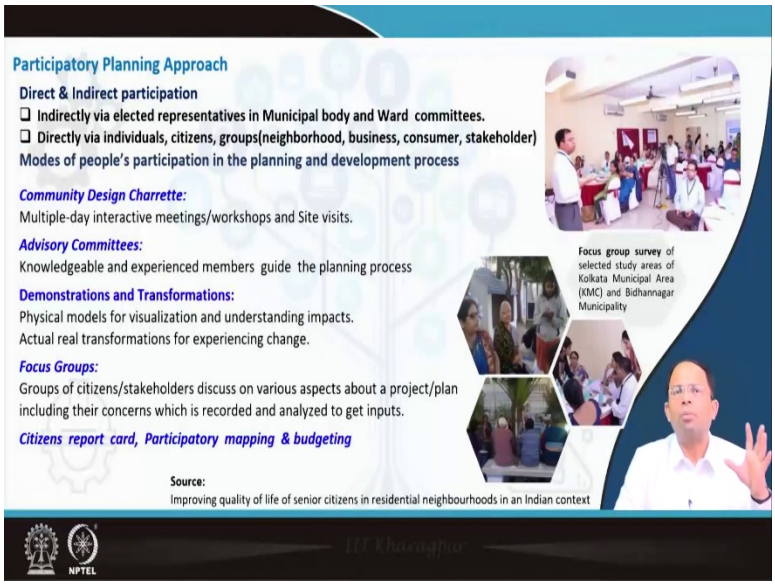

So, the other aspect when we are talking about participatory planning approaches of course, now how do I actually implement it, we can say that we can involve people, but actually how do I do that, so, there could be direct or indirect participation. Now, direct participation is we can invite people in the decision-making processes and all we can involve people directly we can involve citizens, the people who have right to vote in that particular locality.

We can involve individuals, individual means, people who are thought leaders, people who are respected people in that society, people who has got opinion activist, those are the individuals then we can call the different kinds of groups, interest groups, like for example, there are neighbourhood social residential groups, there are business groups there is this Chamber of Commerce for a particular urban area.

Then there are consumer groups, then there are other stakeholders, this different groups could be also brought in that decision making process. Now, this is the direct process, but there could be indirect process as well, in indirect process, the people are not directly brought into the decision making process or the decision making table instead, their representatives or their elected representatives are the one who bring that choices of resident groups in their neighbourhood or the businesses in his locality or the citizens in his locality and he bring their opinion to the table and he is the one who negotiates in the planning process to decide on the final outcome for that particular plan.

So, elected representatives in the municipal corporations or the municipal bodies or the urban local bodies are people who are elected by this the different parts of the urban area for

different parts, we have got different representatives and they also can take a call based on because there may be conflicting objectives, there may be similar things that they want, there may be things where their objectives will not or their wishes will not match, so, they can negotiate, and they can come out with the final requirements for an urban area.

So, there are different ways we can involve citizens directly. So, some of these are community design charrettes then we can form advisory committees, we can have certain pilot projects of demonstrations and transformations to show the people that what can be done, because people may not have an idea about the particular things that technical people are saying, because, technical people may give an option, but people may not understand what that option is.

So, some demonstrations, some physical models, all these things may actually help in taking that decision or people may understand that what is the actual change that will happen, they can experience that change, and they then they can say that, well, this is a good choice. And they must also say that this has to be condemned.

Otherwise, they if they feel that this is something which they do not understand, they may actually object that even though it may be beneficial for them. We can do focus groups service, like for example, if I want to understand what sort of services has to be provided for the senior citizens, I conduct as stakeholder's survey and a citizen survey of the senior citizen I bring them to the table I form focus groups have a one to one discussion or a group wise discussion with this people understand what are the problems they are going through, and then we begin to formulate a list of things that has to be done.

So in one of our projects, research projects that we did, where we looked into improving the quality of life of senior citizens in residential neighbourhoods in India, we have actually gone to different localities. We have talked with the people in the neighbourhoods like you will find that in the neighbourhood. There are parts where old people come and then they sit we found focus groups over there we had detailed discussion.

Then they brought this focus people into not everybody but selected group members or selected representatives we brought them and selected stakeholders we brought them and we formed workshops, we had detailed discussions, we formed sort of… and then we try to decide what kind of services are relevant for this particular people, which has to be provided for this old people.

Now, similarly, if similar kinds of workshops or this interactive meetings or site visits are conducted from the municipal bodies, we can we sometimes call them as community design shattered. So, we actually involved with the people show them or have a discussion with them and then we try to convince them that this is good or bad for particular society or that particular neighbourhood and then we can take decisions on what kind of services has to be provided.

Similarly, we can have advisory committee have knowledgeable people experience people in this particular matter. And then we have got citizen report cards or participatory mapping and budgeting also that could be conducted. What it means is, for example, participatory mapping and budgeting is where people are also involved in the budgeting process, that means, where I should spend money.

What kind of services has to be provided. So, people have a say in that, so, we go door to door we ask people or we do surveys to understand what kind of services they want, how they want to spend the money and so on. So, mapping is to understand what sort of services are provided in which geographic area we can do those kinds of mapping exercises. And similarly, we can take feedback from the citizens we can, we can conduct surveys and can ask that what is the level of service that they are provided, what is their perception about the service, so, citizen report cards can be also utilised to determine what sort of services has to be provided and all these are part of this participatory planning approach.

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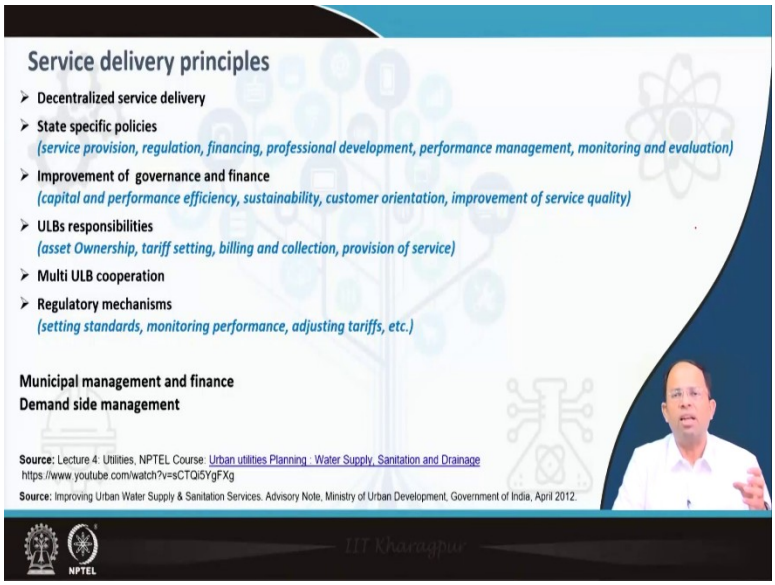

So, in addition to this, there are certain service delivery principles, which needs to be adhered to, for example, most of this service delivery principles are again common for all kinds of services. For example, we always try to go for decentralised service delivery because, if you go for a more decentralised service, there are a lot of we can take care of the local contexts, we there are a lot of aspects which are we do not take the problem to an urban level.

So, sometimes the problem increase because we are gradually going taking the all the problems together to solve it at a local level is much easier, then every state every local body has got certain own rules or own policies, which has to be followed in terms of service provision, regulation, financing and so on.

So, these are the different aspects that has to be considered, then in general terms improvement of governance and finance, the responsibilities of the ULBs what they have to do, like for example, they have to set the tariffs, billing and collection systems, all these different aspects, that is part of service delivery, and then Multi ULB cooperation.

If there are 2 or 3 always which are nearby, there has to be cooperation between these ULBs, why? For example, the landfill site that may be shared by all the municipalities, the drainage system for a particular municipality that if my drainage system is so aligned, that the water goes into after collect getting collected in my urban area, the water goes into the next urban area, it flows because of the natural slope.

So, there has to be cooperation between these municipalities to solve this problem. And finally, the regulatory mechanisms, the standards, the monitoring systems, all these things also are part of service delivery principles that has to be addressed, while we design a service for a particular urban area.

So, some of these are discussed in our other lecture, which is the NPTEL course where we talk about Urban Utilities planning, particularly for water supply, sanitation and drainage and when we talk about you planning for utilities, not municipal services, but services provided by utilities and all of course, of course for municipal areas, there we have discussed this in detail and that you can refer to that from this particular YouTube lecture, which would give you added perspectives in this particular area.

So, in addition to the management side, the which is primarily the supply side the municipal management and finance, we can also look into the demand side management. What it means is that means, we need to provide service because there is a demand for this service. But if I can manage the demand so that the demand could be modified. For example, demand for Solid Waste Collection.

Now, if I can reduce the quantity of waste that is generated, obviously the service that have to be provided will be much more simpler. So, that is demand side management if I can reduce consumption of water, then water supply provision or services that has to be provided that has to be the infrastructure that is required everything is lessened. So, demand side management is another side of service delivery that has to be also addressed.

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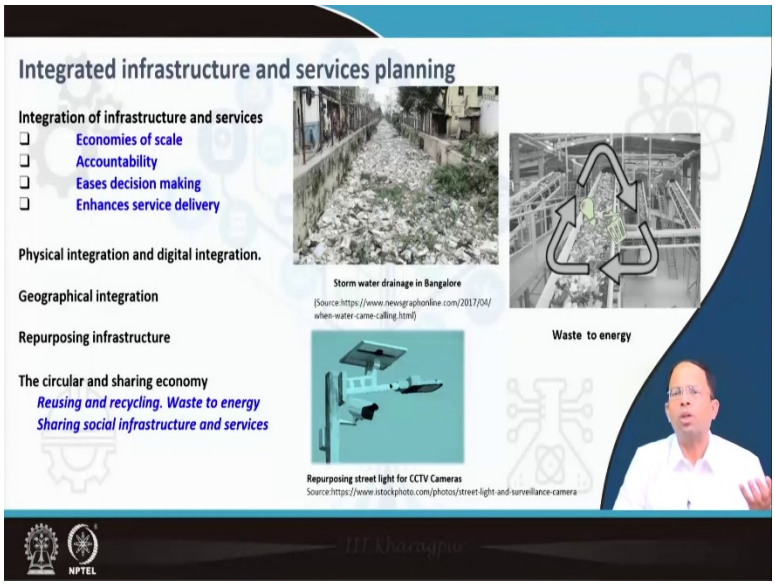

Finally, comes the integrated service infrastructure and services planning that means, there are different services that are provided in an urban area and then there are a lot of overlaps. For example, you can see in this picture this municipal drain or this drainage system in Bangalore, this train is supposed to in case of rainfall, this train is supposed to drain the excess water quickly out of the locality, so, that the locality does not get flooded, but if you see that people have dumped solid waste in this particular drainage channel, and obviously, the drainage channel will get clogged.

So, that is because there is no coordination or there is little coordination between solid waste management and the drainage infrastructure provision or the management of or maintenance of drainage infrastructure in that particular urban area probably this is the result and this will result in failure of both the systems, neither the solid waste is collected, neither it is your it is allowing water to be drained out of the city. So, it is both creating floods at the same time the entire area stretch is becoming dirty.

So, there needs to be integration between the services that are being provided in an urban area. Similarly, if I talk about waste generation or the waste collection in an urban area, that collected waste, if it is collected in a particular way, like we segregate the waste, we take it to a facility where for the separation of recyclable article items from that waste is taken out and then we are left with certain material which could be burnt, incinerated.

Now, if a waste is incinerated, we can have a system of… we can convert this energy into electrical energy that means, the incineration when we burn the waste, we can using that

energy or the heat that is generated, we can run some turbines we can use steam and then we can run turbines through which we can generate energy or we can produce electricity.

So, this is where we can combine waste generation along with your energy supply for a particular urban area and that is actually integration of 2 different sorts of service or infrastructure for an urban area. So, integrated infrastructure and services planning, it helps in economies of scale.

So, I can reduce the overall cost and finance required to run this kind of services, because those are integrated, it increases accountability, it eases decision making, and it also finally, enhances service delivery. So, of course, integration is required right now, most of our urban areas, each of these services work independently, but the in future we have to gradually integrate these services so, that one does not affect the other and actually helps to economise both in terms of finances as well as result and the quality of the service that we can deliver.

Now, integration can be both physical integration as well as digital integration, it could be also geographical integration. That means, physical and digital means physically some services cannot be integrated, but digitally means through some ERP system or using some ease services, we can actually integrate this kind of services together.

Geographical integration means multi ULB cooperation that is different regions have got different services we can actually integrate and we can cooperate. So, that is geographical integration, then we can also look into repurposing infrastructure that means, suppose we have got light post, we want to repurpose it for holding the CCTV cameras, maybe the light post may have not become operational, but now we can put in 5G infrastructure or CCTV cameras on that light post.

So, in this way, we can repurpose infrastructure. And finally, in today's context, we are gradually trying to move into a system where we are moving into a sharing economic model, we are going into a sharing economic system and also circular economic system. That means we have to reuse and recycle a lot more compared to what we have to done. For example, one example is waste to energy that we actually talked about.

That means we can recycle some of the or reuse that waste and generate energy out of it. And then we can also share social infrastructure services, like for example, that Uber services or

ride sharing services can serve passengers in the morning for taking them from one point to another, whereas in the evening, they can deliver goods in an urban area.

So, we can share different kinds of services and a lot of social infrastructure can be shared, for example, a school that is used in the morning as a standard school in the evening, it could be used for our community, awareness generation centre or it could be a centre where poor people can actually can take shelter in the night and so on. So, we can share social infrastructure as well.

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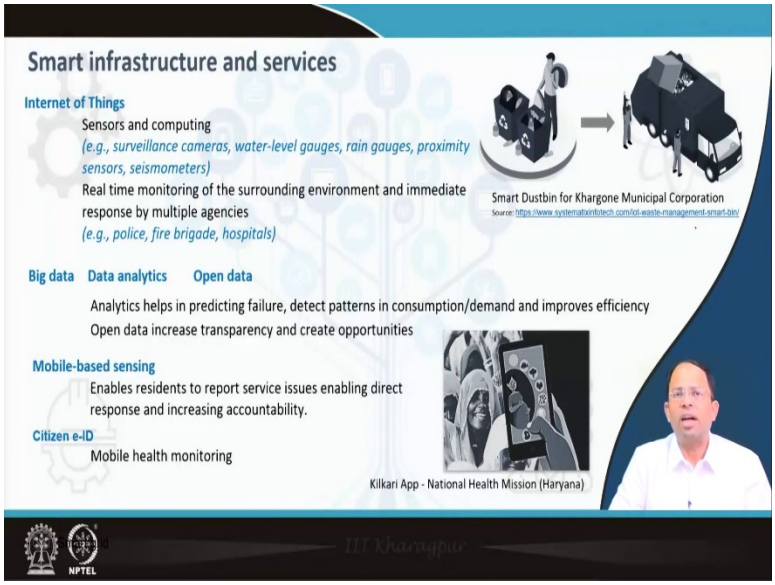

Finally, as we have talked about earlier that we can gradually improve the services via introduction of technology or introduction of smart infrastructure and services, for example, we can use a lot of sensors and computing as you know that Internet of Things actually allows us to embed sensors in different infrastructure, and this data could be transferred over the internet so, that this data is gives us real time information.

We can monitor the surrounding environment and accordingly we can also address those based on whatever we can get out these problems that are identified, we can actually address those problems immediately. For example, we can monitor the congestion level in a particular road network and we can address immediately that was we can send some traffic management personnel over there to create maybe there may be a vehicle which is broken down and so on. So that can be actually brought in.

So these are the different Internet of things are making our infrastructure smarter. And all this data that is generated, it is a huge amount of data that has to be analysed, and then it has to be shared with people. So, we usually call them big data, because huge amount of data is being generated, they need to be stored in a certain way.

So, we call them big data. And then the next job is to, use this data to generate meaningful decisions. So, analytics helps in predicting failure, it helps in detecting patterns in consumption and demand and helps to improve efficiency.

So data analytics is required. Using the big data, we can do this data analytics. And finally, once this data is analysed, we can share this data, which in form of open data platform so that this data could be utilised by many citizen groups or other stakeholders in the urban area, which can improve transparency and it can create new opportunities for these stakeholders.

For example, if I know that what are the real estate vacancies in a particular urban area, maybe some people can create some businesses, then he can provide some services in terms of providing suggestions to clients that were this sort of opportunities are there to provide this real estate at a lower price or rental housing at a lower price, so, new business opportunities are created.

Then mobile based sensing, we have already discussed on this, people can use their own mobile phones to actually send information regarding a particular service. Or sometimes, residents can report some issues via these mobile phones at the same time, they can be also given some feedback via these kinds of services, for example, this Kilkari app, which is part of the National Mission Health mission, it is being implemented in Haryana, where maternal health issues are being addressed via this app, people can report problems or also they get feedback on different aspects on maternal health, so that it overall improves the health of the community.

So citizen, and if we can create an ID for each of the citizens, then we can know that who is having problem so mobile health monitoring of individuals also can be taken up. So, these are the different ways we can involve or we can actually improve the services that can be provided in an urban area to provision of technology or provide the provision of these kinds of e-services.

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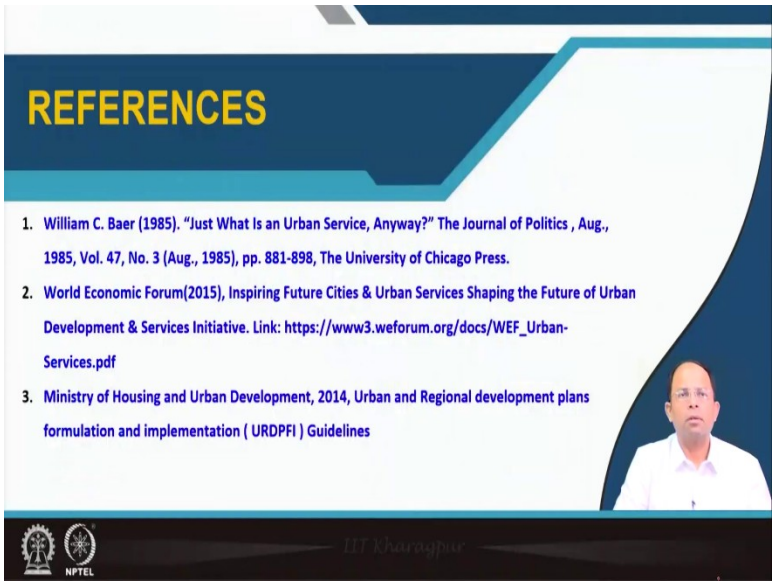

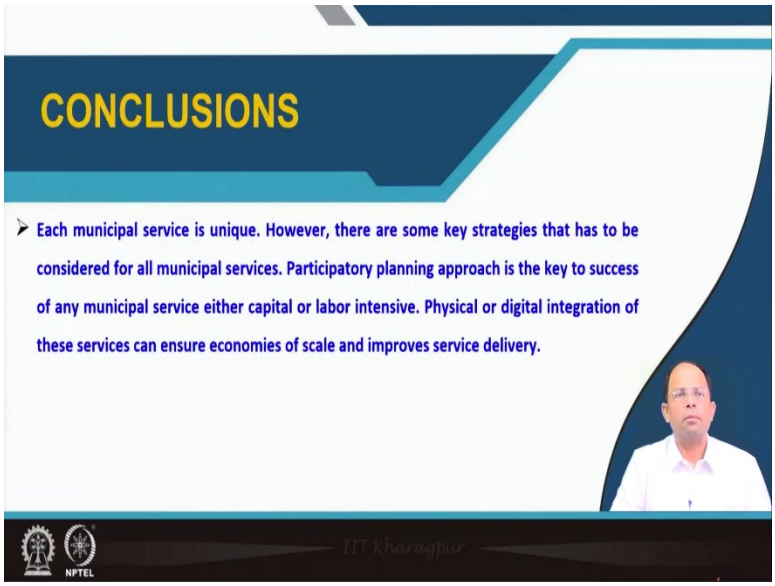

These are the references and to conclude, each municipal service is unique. But there are some key strategies that has to be considered for all municipal services. Particularly participatory planning approach is key to success of most municipal services both capital as well as labor intensive services, and physical or digital integration of these services can ensure economies of scale and also improve service delivery. Thank you.